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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/089,156	03/27/2002	Hiroaki Munehira	220800U2XPCT	9787
22850	7590	08/09/2005	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			WANG, QUAN ZHEN	
			ART UNIT	PAPER NUMBER
			2633	

DATE MAILED: 08/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/089,156

Applicant(s)

MUNEHIRA ET AL.

Examiner

Quan-Zhen Wang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 June 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-2, 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art fig. 1 of the instant application in view of Ryu et al. (U.S. Patent US 6,330,384B1) and further in view of Katagiri et al. (U.S. Patent US 6,359,724 B1).

Regarding claims 1 and 7, the prior art fig. 1 of the instant application teaches a wavelength division multiplexing and optical transmission apparatus comprising a plurality of optical transmitting units (fig. 1, optical transmitting unit 1-m to 1+m) for modulating a plurality of laser signals having inherent wavelengths with a plurality of data signals and outputting a plurality of modulated optical signals (fig. 1, λ -m to λ +m); optical multiplexing means for multiplexing the non-modulated dummy optical signals (fig. 1, λ 2 and λ 3) with the modulated optical signals output by the optical transmitting units and transmitting a multiplexed optical signal. The prior art fig. 1 differs from the claimed invention in that the prior art of the instant application does not specifically teach optical amplifying means for outputting an amplified spontaneous emission light signal outputting a non-modulated spectrum slice optical signal. However, Ryu teaches optical amplifying means (fig. 3) for outputting an amplified spontaneous emission

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(ASE) light signal (fig. 3, 20'); Ryu further teaches that the ASE light source can be used as light sources of sliced spectrums (column 1, lines 20-24) to provide inexpensive access networks. Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to incorporate a sliced spectrum from amplified spontaneous emission light source, as it is taught by Ryu, into the system of the prior art fig. 1 to replace the dummy optical signal sources in the system of the prior art fig. 1 in order to provide stable dummy signal and an inexpensive network. The modified system of the prior art fig. 1 and Ryu further differs from the claimed invention in that the prior art fig. 1 and Ryu do not specifically teach to use a bandpass filter to slice the spectrum of an amplified spontaneous emission light source. However, it is well known in the art to use a bandpass filter to slice an amplified spontaneous emission light source. For example, Katagiri discloses that it is has been known to slice an amplified spontaneous emission light source (figs. 21-22; column 2, lines 7-19). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to incorporate a band pass filter into the modified system of the prior art fig. 1 and Ryu to slice the spectrum of the amplified spontaneous emission light source and setting both an occupied wavelength band of the modulated optical signals output by the optical transmitting units and a neighboring wavelength band of the occupied wavelength band as a filtering wavelength band in order to select proper center transmission wavelengths from the amplified spontaneous emission light source for the dummy optical signal.

Regarding claims 2 and 8, the prior art fig. 1, Ryu and Katagiri have been discussed above in regard with the rejection for claim 1. Ryu further teaches that the optical amplifying means (fig. 3) having a signal input terminal terminated at no-reflection (column 3, lines 18-24) . The modified system of the prior art fig. 1 Ryu and Katagiri further differs from the claimed invention in that the prior art fig. 1 Ryu and Katagiri do not specifically teach that the optical amplifier means comprises a pair of optical amplifiers. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ more than one optical amplifiers for the optical amplification means since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

3. Claims 3 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art fig. 1 of the instant application in view of Ryu et al. (U.S. Patent US 6,330,384B1) and Katagiri et al. (U.S. Patent US 6,359,724 B1) and further in view of Chan et al. (U.S. Patent US 6,009,220).

Regarding claims 3 and 9, the system of the prior art fig. 1, Ryu, and Katagiri differs from the claimed invention in that the prior art fig. 1, Ryu, and Katagiri do not specifically teach that the system comprises a light dividing element for dividing the amplified spontaneous emission light signal output by the optical amplifier into a plurality of amplified spontaneous emission light signals, and a plurality of optical band pass filters, connected to a plurality of divided output terminals of the light dividing element

respectively, for outputting the non-modulated spectrum slice optical signal. However, Katagiri further discloses that an arrayed wavelength waveguide grating filter can be used to simultaneously obtain signals of a plurality of wavelengths from the amplified spontaneous emission light signal. In addition, it is well known in the art to split an optical signal using a light dividing element. For example, Chan discloses to split a light signal using a light dividing element (fig. 1a, splitter 19). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to incorporate a light dividing element, as it is disclosed by Chan, into the modified system of the prior art fig. 1, Ryu, and Katagiri for dividing the amplified spontaneous emission light signal output by the optical amplifier into a plurality of amplified spontaneous emission light signals, and connect a plurality of optical band pass filters to the output terminals of the light dividing element in order to simultaneously obtain signals of a plurality of wavelengths from the amplified spontaneous emission light signal.

4. Claims 4 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art fig. 1 of the instant application in view of Ryu et al. (U.S. Patent US 6,330,384B1) and Katagiri et al. (U.S. Patent US 6,359,724 B1) and Chan et al. (U.S. Patent US 6,009,220) and further in view of Fukushima et al. (U.S. Patent US 6,198,570 B1).

Regarding claims 4 and 10, the prior art the prior art fig. 1, Ryu, Katagiri and Chan have been discussed above in regard with the rejection for claim 3. The modified system of the prior art fig. 1, Ryu, Katagiri and Chan differs from the claimed invention

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in that the prior art fig. 1, Ryu, Katagiri, and Chan do not specifically teach that the system further comprises an optical multiplexer for multiplexing two or more outputs of the optical band pass filters with each other and outputting the non-modulated spectrum slice optical signal, and an optical amplifier for amplifying an output of the optical multiplexer while controlling a power of the output to a constant value. However, it is well known in the art to use optical multiplexer for multiplexing two or more outputs of the optical signals, including non-modulated spectrum slice optical signal, and an optical amplifier for amplifying an output of the optical multiplexer while controlling a power of the output to a constant value. For example, Fukushima teaches to use an optical multiplexer (fig. 1, multiplexer 3) for multiplexing two or more outputs of the optical signals (fig. 1, λ_1 - λ_n), and an optical amplifier (fig. 1, optical amplifier 4) for amplifying an output of the optical multiplexer while controlling a power of the output to a constant value (column 7, lines 6-10). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to incorporate an optical multiplexer for multiplexing two or more outputs of the optical signals, and an optical amplifier for amplifying an output of the optical multiplexer while controlling a power of the output to a constant value, as it is taught by Fukushima, in the modified system of the prior art fig. 1, Ryu, Katagiri, and Chan in order to boost the power strength of the ASE source used for dummy optical signals.

5. Claims 5 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art fig. 1 of the instant application in view of Ryu et al. (U.S. Patent US

6,330,384B1) and Katagiri et al. (U.S. Patent US 6,359,724 B1) and further in view of Alphonsus et al. (U.S. Patent US 5,764,405).

Regarding claims 5 and 11, the prior art fig. 1, Ryu, and Katagiri have been discussed above in regard with the rejection for claims 1 and 2. The modified system of the prior art fig. 1, Ryu, and Katagiri differs from the claimed invention in that the prior art fig. 1, Ryu, and Katagiri do not specifically teach that the optical amplifying means comprises a plurality of pumping laser signal sources connected to the optical amplifier redundantly. However, it is well known in the art that redundant pumping lasers are used to provide for a virtually non-failing optical amplifier. For example, Alphonsus teaches to use redundant pump lasers (fig. 2, Pumps 50) to provide for a virtually non-failing optical amplifier (column 4, lines 21-32). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to incorporate an amplifier with redundant pump sources, as it is taught by Alphonus, along the transmission line, in the modified system of the prior art fig. 1, Ryu, and Katagiri in order to boost the ASE power strength for dummy optical signals and provide reliable transmission system.

6. Claims 6 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art fig. 1 of the instant application in view of Ryu et al. (U.S. Patent US 6,330,384B1) and Katagiri et al. (U.S. Patent US 6,359,724 B1) and further in view of Mathis (U.S. Patent US 4,726,644).

Regarding claims 6 and 12, the prior art fig. 1, Ryu, and Katagiri have been discussed above in regard with the rejection for claim 1. The modified system of the prior art fig. 1, Ryu, and Katagiri differs from the claimed invention in that the prior art fig. 1, Ryu, and Katagiri do not specifically teach that the band pass filtering means comprises a plurality of optical band pass filters connected in cascade. However, it is well known in the art to cascade two or more band pass filters. For example, Mathis teaches to connect two filters in cascade (column 9, lines 44-50). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to use a plurality of optical band pass filters connected in cascade, as it is taught by Mathis, in the modified system of the prior art fig. 1, Ryu, and Katagiri in order to provide multiple stage of bandpass filtering with a narrower pass band.

Response to Arguments

7. Applicant's arguments with respect to claims 1-6 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Falquier et al. (U.S. Patent US 6,429,965 A1 B1) is cited to show a wavelength stable ASE source.

DeMarco et al. (U.S. Patent US 6,195,200 B1) is cited to show a high power ASE source.

Dugan et al. (U.S. Patent US 6,157,475) is cited to show a system to amplify wavelength multiplexed optical signals.

Badr et al (U.S. Patent US 6,567,207 B1) is cited to shown optical amplifiers with redundant pumps to increase the reliability.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quan-Zhen Wang whose telephone number is (571) 272-3114. The examiner can normally be reached on 9:00 AM - 5:00 PM, Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


M. R. SEDIGHIAN
PRIMARY EXAMINER